

CALFED Bay-Delta Program Project Information Form

Watershed Program - Full Proposal Cover Sheet

Attach to the cover of full proposal. All applicants must fill out this Information Form for their proposal. Failure to answer these questions and include them with the application will result in the application being considered nonresponsive and not considered for funding.

1. Full Proposal Title: Cosumnes River Watershed Inventory and Assessment

Concept Proposal Title/Number: Upper Cosumnes River Watershed Resources Inventory and Assessment: Phase II/WSP01-0087

Applicant: Sloughhouse Resource Conservation District (RCD)

Applicant Name: Tina Lunt

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Applicant mail: tina.lunt@ca.usda.gov

Fiscal Agent Name (if different from above): Same as above

Fiscal Agent Mailing Address: _____

Fiscal Agent Telephone: _____ Fiscal Agent Fax: _____ Fiscal Agent Email: _____

2. Type of Project: Indicate the primary topic for which you are applying (check only one)

<input checked="" type="checkbox"/> Assessment	<input type="checkbox"/> Monitoring
<input type="checkbox"/> Capacity Building	<input type="checkbox"/> Outreach
<input type="checkbox"/> Education	<input type="checkbox"/> Planning
<input type="checkbox"/> Implementation	<input type="checkbox"/> Research

3. Type of Applicant:

<input type="checkbox"/> Academic Institution/University	<input checked="" type="checkbox"/> Non-Profit
<input type="checkbox"/> Federal Agency	<input type="checkbox"/> Private party
<input type="checkbox"/> Joint Venture	<input type="checkbox"/> State Agency
<input type="checkbox"/> Local Government	<input type="checkbox"/> Tribe or Tribal Government

4. Location (including County):

What major watershed is the project primarily located in:

☐ Klamath River (Coast and Cascade Ranges)
☐ Sacramento River (Coast, Cascade and Sierra Ranges)
☒ San Joaquin River (Coast and Sierra Ranges)
☐ Bay-Delta (Coast and Sierra Ranges)
☐ Southern CA (Coast and Sierra Ranges)
☐ Tulare Basin (Coast, Sierra and Tehachapi Ranges)

5. Amount of funding requested: \$556,325

Cost share/in-kind partners? ☒ Yes ☐ No

Identify partners and amount contributed by each:

Sacramento Department of Water Resources - \$28,150

Sacramento County NRCS - \$10,450

Sloughhouse RCD - \$10,000

Sacramento County Farm Bureau - \$700

6. Have you received funding from CALFED before? Yes X No

If yes, identify project title and source of funds:

By signing below, the applicant declares the following:

1. The truthfulness of all representations in their proposal
2. The individual signing this form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or an organization)
3. The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the Watershed Program Proposal Solicitation Package and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in the Proposal Solicitation Package.

Tina Lunt

Printed name of applicant

Signature of applicant

Upper Cosumnes River Watershed Inventory and Assessment: Phase II

Project Description

The Sloughhouse Resource Conservation District (RCD) in coordination with the Cosumnes River Task Force (CRTF) seeks to complete resource inventories in the Cosumnes River watershed for the purpose of developing a future watershed management plan. The RCD proposes to use information collected from previous studies, ongoing studies, and activities in this proposal to develop a watershed conditions assessment identifying resource problems throughout the watershed as the basis for a future watershed management plan (Phase III). Based on stakeholder meetings led by the CRTF, there is a strong local desire for a comprehensive watershed planning process to be completed in the Cosumnes River watershed. However, it is clear that uncertainty remains among all stakeholders regarding what and where the critical problems in the watershed are. Ongoing studies by other organizations (described in greater detail under “Scientific Basis”) are collecting some, but not all, data necessary to specifically support a watershed planning effort. This project provides the additional information needed to fully support a future watershed planning effort.

Task 1: Provide administrative support. The RCD will provide all necessary administrative support of this project. The RCD will provide management and administrative services for the proposed project. The RCD will contract services, hire subcontractors, supervise, monitor, administer budget and finances and review all work performed to assure contract completion within budget, on schedule and in accordance with approved procedures, applicable laws and regulations. The RCD will provide monthly reports to the CRTF and Quarterly Status Reports to the CALFED Contract Manager. Additionally, as a project monitoring and adaptive management tool for both the RCD and CALFED, the RCD will conduct a mid- and end-project evaluation meeting of our consultants, and key agency, academic, and landowner stakeholders to assess progress, evaluate project success, and potentially revise project direction if necessary.

Task 2: Develop and complete resource inventories.

Task 2.1: Compile recent and historic aerial imagery. This task involves compiling a complete set of recent and historic aerial photographs of the watershed, to be used in many of the other tasks and to be available to future watershed managers and other researchers (as discussed under “Scientific Basis”).

Photographs from 1993 are available for the entire watershed and can be used to define recent conditions. Photographs from approximately 1971 to 1975, that could be compared against the 1993 images, also appear to be available for the entire watershed. This task includes photo acquisition, evaluation, and cataloging (months 1–3). Aerial photographs will be used in many of the other tasks (e.g., Tasks 2.2 to 2.8) and archived for future mapping and planning efforts. An evaluation of the photographic resolution and scale available to use in Phase III will also be completed.

Task 2.2: Prepare a map of erosion features in the watershed. The RCD will prepare a map of active erosion features in the Cosumnes River watershed. The results of this work will be a geographic information system (GIS) data layer that will be used in Phase III to identify where erosion control measures should be implemented. The map will be prepared using the most recent aerial orthophotographs compiled in Task 2.1. Erosion features will be identified from the photographs and mapped based on photographic signature. The precision and accuracy of feature identification will be determined. We assume that minimal ground truthing will be required. The rate of erosion occurring at a given erosion feature will not be quantified. Streambank erosion may not be apparent on the aerial photographs, consequently, they will not be mapped under this task. However, such information will be collected under Task 2.6 below.

The focus of this mapping will be to identify apparent sediment-producing “hot spots” in the watershed. Only discrete areas of obvious sheet, rill, gully, and mass movement erosion that appear to be significant producers of sediment will be mapped. The minimum mapping unit will be 1–10 acres, depending on the resolution of aerial photography and the size of these features. The aerial extent of each feature will be digitized as a polygon on a GIS data layer. The type and probable cause of erosion will be identified and associated with the feature as an attribute. Steps include aerial photograph interpretation (months 1 and 2), digitization, and GIS management (month 3).

Task 2.3: Prepare land cover/land use map. The RCD will prepare an existing land cover/land use map of the watershed. The result of this work will be a GIS data layer to support other tasks and studies. The task will also involve mapping historic land cover/land use (1970s) in the watershed to provide a basis for identifying the locations and types of changes that have recently occurred. Existing data, such as those from CalVeg, California Wildlife Habitat Restoration Program, National Wetlands Institute, and U.S. Forest Service (Forest Service), supplemented by aerial photographs, will be used to prepare the land cover/land use maps. Natural vegetation cover types will be mapped according to Holland’s (1986) general categories for non-cultivated and urban areas. Crop types will be categorized into such classes as row crop, irrigated pasture, vineyard, and orchard. Urban land uses will be categorized into three levels of density: low density residential, suburban, and urban. The minimum mapping unit will be 10 acres.

Existing electronic data will be downloaded or otherwise acquired from state and federal sources and converted into GIS format. The attributes of these data will be converted as required into appropriate categories. Where data gaps exist, aerial photographs will be interpreted to map land cover/land use conditions. We assume that no more than 10% of the watershed will require such photo interpretation. Steps include data acquisition (months 1 and 3); and data entry into the GIS (months 4 and 5).

Task 2.4: Prepare and evaluate map of unsurfaced roads. The RCD will prepare a map of unsurfaced roads in the Cosumnes River watershed. The result of this work will be a GIS data layer that, when evaluated in context with other GIS data (such as slope gradient), will provide a basis for identifying the relative potential for erosion of specific roads. Such information may be used in Phase III to identify where road decommissioning and road drainage improvements should be implemented. This task is necessary because unsurfaced roads generate a disproportionate amount of sediment compared to other types of land cover.

Using the most recent aerial photographs available, unsurfaced roads in non-Forest Service land will be mapped and digitized to make a new GIS data layer. Digital or hard-copy maps of unsurfaced roads within Eldorado National Forest Service lands will be acquired from Forest Service and entered into a separate data layer. Locations of stream crossings will be specifically noted. These data will be used in Task 2.5 to identify sources of sediment by sub-basin. Steps include aerial photograph interpretation (months 1 and 2); data entry into the GIS (month 3); and GIS analysis (month 4).

Task 2.5: Prepare predictive sediment yield analysis. The RCD will conduct a GIS-based sediment yield analysis of the watershed. The results of the analysis will predict the average annual sediment loss from sub-basins within the watershed. Based on this work, the land cover types/land uses most closely associated with the greatest rate of soil loss will be identified. The analysis will also provide a basis for identifying the basins in which watershed stabilization efforts should be directed. This work will include sediment yields associated with unsurfaced roads (as described in Task 2.4).

The following existing data will be used to prepare the analysis: GIS-based soil survey data (SSURGO and STATSGO; in particular, revised soil loss equation “K” values) provided by the National Resources Conservation Service (NRCS); digital elevation model data from NRCS; GIS-based land use and vegetation data from NRCS; hydrologic characteristics data from UCD; and interviews with local NRCS, RCD, and Forest Service staff regarding farming, grazing, and logging practices. The sediment yield model will be based on the Revised Soil Loss Equation or other appropriate models. Because little or no calibration will be done, model output will provide only relative contributions of sediment by land cover/land use and by sub-basin, rather than absolute estimates of sediment yield. Steps include data acquisition and entry into the GIS (months 1 and 3); and analysis of the data (months 4 and 5).

Task 2.6: Channel condition assessment. Channel condition is an integrating factor that provides the link between watershed practices and their effect on aquatic resources. Often channel condition is a limiting factor for fish, aquatic invertebrates, and riparian communities. Consequently, the RCD will conduct a reconnaissance-level assessment of channel conditions between the Eldorado National Forest and Highway 16. This assessment will incorporate the methods used on the National Forest (as described in “Scientific Basis”) and will result in a complete coverage of the entire watershed. Results of this task will include a map showing the distribution of channel types in the watershed, along with tables showing channel attributes for all sample locations. This information will be used to identify channel reaches that exhibit less than optimal conditions regarding erosion, sediment transport and riparian/aquatic habitat.

Information collected during the assessment will include channel and floodplain characteristics. Channels in the assessment area will be subdivided based on channel gradient, bedrock controls and valley morphology. Within the subdivided reaches, representative locations will be assessed in terms of channel dimensions, substrate (size and distribution), fine sediment accumulation (e.g., in pools and riffles), bank erosion, aquatic habitat (quality and quantity), and riparian communities. Distribution of aquatic resources (from existing data) will be evaluated to identify critical habitats (e.g., spawning areas of sensitive species). Problem areas of habitat or channel function will be linked to adjacent contributing land uses, erosion and sediment yield, and hydrologic characteristics data from UCD. Steps in completing this task include; reviewing work done in the Eldorado National Forest (month 1), subdivision of channel reaches and determination of sample locations (month 1 and 2), field data collection at sample locations and compilation of data (months 2 and 4), analysis of data, identification of problem areas and linkages to aquatic resources, land use and erosion studies (month 4 and 6), report preparation (month 7).

Task 2.7: Sediment transport monitoring. Total sediment load at the Michigan Bar gauge will be measured during several individual storm events in the 2001–2002 water season to develop sediment load rating curves from this portion of the watershed. These curves will be used to verify sediment yield estimates developed from ongoing and proposed upper watershed studies, as well as for ongoing and proposed studies of sedimentation dynamics in the middle and lower reach of the river. The newly developed sediment transport rating curve will be compared with historical measurements completed by the USGS at the same location to assess any changes in the sediment load characteristics. Field measurements of sediment transport near Michigan Bar will also be useful for defining the amount of gravel recruitment potentially affecting the critical spawning reach downstream from the gage, as well as the quantities of suspended sediment that may affect spawning gravel

quality. Suspended sediment loading will be useful for evaluating sediment deposition opportunities at levee breach locations downstream from Highway 99.

Sediment load sampling will be conducted in accordance with USGS sediment sampling techniques and will include bedload and suspended load measurements. Bedload measurements will be obtained with a Helley Smith bedload sampler, and suspended load measurements will be obtained with a P-61 isokinetic suspended sediment sampler. The mass and gradation of the bedload samples will be analyzed in the laboratory to describe size characteristics of gravel passing this location. Suspended sediment samples will be analyzed for total concentration, as well as an estimate of the total suspended sand and total suspended silt and clay in the samples. Steps include reviewing historical sediment load relationships (month 1), coordinating access agreements with the USGS for sampling (month 2), sediment sampling during the winter months (months 3 and 7), laboratory analysis (month 8), and data analysis (months 9 and 10).

Task 2.8: Historical reconstruction of the middle reach. The reach bounded by Highway 16 and Highway 99 has been identified as critical habitat for salmonid spawning and rearing. Several human-induced land use changes have occurred in this reach, including levee construction, low-water diversion construction and operation, and aggregate extraction. All these factors have affected the present morphological characteristics of the reach, as well as the locations of spawning gravels within this reach. The historical analysis will provide snapshots of channel morphological characteristics, as well as natural (i.e. floods) and human-induced activities (i.e. levee construction) that resulted in observed channel changes. The snapshots of historical channel planform and profile allow an assessment of potential habitat restoration and flood mitigation targets for the reach.

A reconstruction of channel planform and profile characteristics will be developed from available channel surveys, aerial photos, and topographic maps. Channel planform changes will be digitized from these aerial photos and topographic maps, and channel profile changes will be estimated from channel surveys and topographic maps. A timeline of historical hydrologic events (significant floods, drought periods, etc.) will be developed. In addition, a timeline of levee construction, aggregate extraction, water diversion dam construction and operation, and other human-induced physical changes to the river system. These timelines will be cross-referenced to develop cause-and-effect relationships between natural and human-induced changes to the system. Steps include historical map and aerial photograph compilation (month 1), historical hydrology and land use reconstruction (months 2 and 3), map and aerial photo digitization (months 4 and 5), timeline development (month 6), and assessment of cause and effect relationships (months 7 and 8).

Task 3: Assess watershed conditions and identify resource problems. The RCD will assess the information collected under Task 2 (and information collected previously by other organizations) with a focus on identifying and confirming resource problems in the watershed. The RCD will identify, to the extent practicable, cause-and-effect relationships relative to identified problems. The RCD will conduct a series of four facilitated workshops with representatives identified under “Scientific Basis” to review the available data and develop technical conclusions. The focus of these meetings will be to develop cause-and-effect relationship models and to map these relationships and specific resource problems throughout the watershed. The RCD will conduct public meetings for stakeholders to assess and comment on preliminary and final conclusions (described further in Task 5). Task 3 will be conducted in months 10 through 12 of the project.

Task 4: Create watershed conditions assessment. The RCD will create a watershed conditions assessment. This document may include but is not limited to descriptions of conditions in the following categories: hydrology and hydraulics, fluvial geomorphology, aquatic ecology, riparian and terrestrial ecology, land use, water quality, and water use. The RCD will document the discussions and results from the Task 3 workshops and Task 5 public meetings. The RCD will develop graphic conceptual models of cause and effect relationships and text narratives supporting these models. The RCD will prepare maps identifying problems and causes throughout the watershed. The report will be the basis for the proposed future watershed planning process and will be used to support the development and prioritization of watershed and site-specific improvements. Task 4 will be conducted in months 12 through 16 of the project.

Task 5: Conduct public outreach and education. To ensure extensive stakeholder involvement, the RCD and the CRTF will conduct an extensive public outreach and education program. This program will include continued coordination and facilitation by CRTF, which has demonstrated successful integration of watershed efforts over the past 5 years. The CRTF Project Coordinator will attend meetings of related watershed organizations, such as the Mokelumne Cosumnes Watershed Alliance. The CRTF will provide monthly updates on their Web site and the Mokelumne-Cosumnes Watershed Alliance website regarding the progress of the project. The CRTF will also prepare a quarterly newsletter to further update stakeholders. The CRTF will host four public meetings (one each in the lower, middle, and upper reaches of the watershed; and one final meeting) to present preliminary and final conclusions and to get public input. The draft and final watershed conditions assessment will be made available on the CRTF Web site as will minutes from all workshops and public meetings associated with the project. Task 5 will be conducted concurrently with other project tasks.

Statement of Qualifications

Institutional Structure

The RCD, established in 1956, is a special district (Government Code 1627 [d]) governed by five directors empowered to lead their community's resource conservation programs. District boards function independently of county government and derive their powers and purposes from state law Division 9. Under Division 9 RCDs are allowed to manage district operation including day-to-day business, its budget and other financial matters. RCDs can also receive funding from various sources to spend on resource conservation activities. The RCD is currently successfully administering a 204 State Water Resources Control Board grant. The RCD is prepared to comply with the state's standard terms and conditions associated with the contracting and administration of the proposed grant.

Technical Support

Partners. The County of Sacramento Department of Water Resources (DWR), Sloughhouse RCD, NRCS state and field offices, and Sacramento County Farm Bureau are all providing in-kind services toward the Cosumnes River Watershed Resources Inventory and Assessment: Phase II CALFED proposal. The Sloughhouse RCD will be the manager of the project. The County of Sacramento DWR has agreed to provide a \$25,000 cash match and will continue to host and maintain the CRTF Web site valued at \$3,150. Sloughhouse RCD will contribute \$10,000 in matching funds. The NRCS field office will provide \$10,450 of in-kind services and materials including: office space, utilities, office supplies, a vehicle, and equipment such as GIS, global positioning system (GPS), and a digital camera for use by the project coordinator. The Sacramento County Farm Bureau will provide a conference room for monthly meetings and workshops at an in-kind value of approximately \$700. The RCD is pleased to include two excellent consulting firms to assist in the implementation of this proposal. The following sections describe these firms.

Jones & Stokes is a multidisciplinary firm that maintains a full-time staff of over 360 professional planners, engineers, environmental specialists, biologists, economists, and attorneys. The firm's headquarters is located in Sacramento, with offices in San Jose, Oakland, Irvine, and Bakersfield, California; Phoenix, Arizona; Ashland, Oregon; and Bellevue, Washington. Jones & Stokes is a recognized leader in the planning and analysis of watershed, water resources, and restoration projects. Since its founding in 1970, Jones & Stokes has prepared more than 3,000 environmental, planning, and economic reports for a wide range of planning studies and other projects.

Jones & Stokes has substantial CALFED experience, as indicated below. Jones & Stokes and Northwest Hydraulic Consultants, Inc. (NHC) have teamed in the past to conduct watershed resource inventories similar to that proposed. Jones & Stokes specializes in providing comprehensive, scientifically sound natural resource studies. Jones & Stokes also specializes in public and agency facilitation and outreach programs, which are critical to the success of watershed studies and planning. Jones & Stokes uses GIS/CAD software on UNIX, DOS, and Macintosh platforms to provide project support and digital data analysis services. We use Intergraph's MGE and MicroStation software, Environmental Systems Research Institute's ARC/INFO, AutoCAD, ERDAS, and GRASS software.

NHC is an internationally known engineering consulting company specializing in the areas of hydrology, hydraulics, sedimentation, fluvial geomorphology, and water resources design. NHC's services in these areas include river and floodplain studies, watershed investigations, channel stability studies and bank protection design, flood damage reduction studies and flood control facility design, stormwater management, and river and wetland restoration projects.

NHC's experience includes analysis of hydraulics and sediment transport in natural channels; analysis and design of channels, levees, and river-training systems; analysis of river system impacts by water and sediment storage, diversion, or augmentation; design and modeling of specialized hydraulic structures; field-survey and data-collection programs; and operation and maintenance programs related to flooding, erosion, and sedimentation. NHC has completed more than 3,000 consulting assignments in these areas since the company was founded in 1972.

NHC has offices in Sacramento, California and Seattle, Washington, where a staff of over 30 professionals provide a full range of services in hydrology, hydraulics, fluvial geomorphology, and river/wetland restoration. NHC also has two offices in western Canada, and international project offices in Bangladesh, Philippines, and Indonesia. NHC has a staff of approximately 70 worldwide.

Previous Project Experience

Similar projects conducted by team members are listed below. A CALFED-funded project is noted as such.

Yolo Bypass Management Strategy (Jones & Stokes [CALFED Project]): Jones & Stokes developed a comprehensive, stakeholder-driven planning process to create a locally guided vision for the future of the Bypass. Public involvement efforts focused on a variety of complex resource management issues, including hydrology and hydraulics, flood control, ecosystem restoration, vector control, socioeconomic impacts, endangered species, harbor issues, and similar topics.

Lower Butte Creek Program (Jones & Stokes [CALFED Project]): Jones & Stokes assisted TNC, California Waterfowl Association (CWA) and Ducks Unlimited in developing a stakeholder-driven process to improve fish passage while maintaining the economic viability of agricultural and managed wetland water users along the lower Butte Creek. Efforts focused on fisheries, water control and delivery structures, water rights, fish passage structures, and associated habitat-issues of Lower Butte Creek. Through a consensus-based process, all stakeholders agreed to a set of proposed alternatives.

San Joaquin River Historic Biological Conditions Analysis and San Joaquin River Physical Processes Analysis (Jones & Stokes): Jones & Stokes, under contract to the U.S. Bureau of Reclamation (Reclamation), used aerial photographs from 1937-1993, historic topographic and irrigation maps from as early as 1887, early narratives, and current GIS technology to study fluvial morphology, and changes in the river channel, riparian vegetation, and adjacent land use from the 1800s to the present.

Guadalupe River Flood Protection and Restoration Projects (Jones & Stokes/NHC): Jones & Stokes and NHC are currently working with the Santa Clara Valley Water District (SCVWD) and the U.S. Army Corps of Engineers (Corps) on three flood protection projects along the Guadalupe River that include flood protection, habitat restoration, and fish passage components.

Solano County Expedited Reconnaissance Study (Jones & Stokes/NHC): Elements of the reconnaissance studies included identifying historic and existing conditions, including landforms, hydrology, vegetation, wildlife, land use, cultural resources, and socioeconomic conditions in the watersheds.

Corte Madera Creek Flood and Sediment Control Study (NHC/Jones & Stokes): The study included background assessments of geomorphic, hydrologic, and hydraulic processes for the Family Farm Road area at Stanford University.

Walker River Special Technical Study (NHC/Jones & Stokes): This California and Nevada basinwide hydrology study included collection of hydrometeorologic data, mapping of basin characteristics in GIS, statistical analysis, 1997 flood analysis, and compilation of river diversion records. The study generated flood-frequency and flow-duration relationships at key index points in the basin for future water resources planning and design efforts.

Walker River Floodplain Mapping Study (NHC/Jones & Stokes): A detailed floodplain mapping study of eight miles of the Walker River in Mono County, this project produced digital work maps and used GIS to compare existing Q3 FEMA maps with proposed new floodplain limits. The results of the study were submitted to FEMA on behalf of Mono County for preparation of a LOMR.

Pajaro River Corridor Management and River Restoration Plan (NHC): This project developed quantitative hydraulic and sediment transport analyses, and detailed development of preferred alternatives to maximize flood control capacity, maintain channel stability, and provide restoration of habitat for the Pajaro River in Santa Cruz County.

Project Costs

Budget summary spreadsheets are provided in Appendix A of this proposal. Summary I, Sheet I includes a breakdown of total proposed costs, and cash and in kind matches as follows:

Labor – All labor costs for the RCD project coordinator at an average billing rate of \$35.57 (including benefits, and general and administrative costs).

Supplies – All expendable goods such as photocopying, paper, writing materials, postage, etc.

Materials – In-kind contributions from Sacramento County NRCS (\$10,450) for office space, vehicle use, computer use, etc. (as described in greater detail in a support letter in Appendix B); Sacramento County Farm Bureau (\$700) for meeting room use by the CRTF; and the County of Sacramento DWR (\$3,150) for CRTF Web site management.

Subcontractor – All services, labor, and direct costs provided and incurred by Jones & Stokes, and NHC

Match – All cash contributions from the County of Sacramento DWR (\$25,000); and the RCD (\$10,000) plus the previously itemized in-kind contributions.

CALFED – The amount requested to be funded by the CALFED Watershed Program

Summary I, Sheet II provides a breakdown of specific combined costs associated with Jones & Stokes and NHC proposed efforts. A more specific breakdown by subtask is provide in Budget Summary II. Numerous staff at different billing rates will be working on this project. The spreadsheet format provided by CALFED does not accommodate the memorialization of all of those different rates. Nonetheless, the general breakdown for Summary I, Sheet II is as follows:

Labor – All combined labor efforts by all Jones & Stokes and NHC staff. Billing rates used to calculate these costs include all benefits, general and administrative costs, and profit. In general, per hour labor rates for senior staff range from \$160 to \$110. Labor rates for mid/junior staff range from \$100 to \$70. Labor rates for administrative and support staff such as editors, graphic artists, and clerical range from \$65 to \$50.

Supplies – All combined expendable goods (which for each task, can include but do not necessarily include meals, lodging, computer time, faxes, reproductions, equipment rental, postage, travel, printer/plotter, and general and administrative expenses of 9.5% on all non-labor costs). In general, supply costs average 10 percent or less of the labor cost per task and subtask. Exceptions to this (not shown due to spreadsheet format constraints) are slightly higher paper and computer costs associated with plotter/printer/GIS/CAD use in many of the subtasks under Task 2.

Materials – All non-expendable goods and services including specifically, aerial photo support for Task 2.1, and laboratory analysis support for Task 2.7

Budget Summary II provides a breakdown of all tasks and subtasks including matching contributions

Costs proposed by the RCD and their subconsultants are based on extensive previous experience. As previously described in the “Statement of Qualifications” section, the RCD has been administering the CRTF and related efforts for over 40 years, Similarly, Jones & Stokes and NHC have completed numerous related projects, both as separate entities and as project partners. Costs associated with this proposal have been developed in the context of the previously described efforts and represent very realistic estimates.

Technical Feasibility

Ongoing Projects: As suggested in the “Project Description” section and discussed in detail in the “Statement of Qualifications” and “Scientific Basis” sections, the RCD has ensured that partnerships are being developed between the numerous federal, state, local, non-profit, and academic organizations working in the Cosumnes River watershed. The RCD has taken great steps to ensure that any tasks proposed in this document are necessary to achieve the stated goal of initiating a future watershed planning process. The RCD has further ensured through numerous interviews with the above-referenced types of organizations that the proposed tasks are additive, rather than duplicative, to efforts previously conducted, or presently underway.

Similar Projects: As described in the “Statement of Qualifications”, successful watershed projects reflect a familiarity and record of success in considering issues of the sort identified within the Cosumnes River Watershed and proposed to be addressed in this project. Similar to the proposed Task 2 and subtasks, the San Joaquin River Historic Biological Conditions and Physical Processes Analyses required the compilation and assessment of recent and historic aerial imagery, including the analysis and use of aerial photographs, historic topographic and irrigation, early narratives and current GIS technology to study fluvial morphology, changes in the river channel, riparian vegetation, and adjacent land use from the 1800s to the present. Also similar to the proposed project’s mapping and assessment components, the Walker River Special Technical and Floodplain Mapping Studies provided mapping of basin characteristics in GIS, and generated flood-frequency and flow-duration relationships at key index points in the basin for future water resources planning and design efforts.

Project Maintenance: As described in the “Project Description” section, this proposal is for the initiation and completion of data collection and assessment tasks. These tasks will support a future watershed planning process. The RCD has purposefully chosen an endpoint of this proposal as the identification of watershed problems. The RCD has not proposed the identification and implementation of any watershed improvement projects. Therefore, this project requires no long-term project maintenance or funding from the community (beyond that offered as a cost share partner by the RCD and the County of Sacramento).

Monitoring

As detailed in the “Project Description” Section, the Sloughhouse RCD and CRTF seek to complete resource inventories in the Cosumnes River watershed for the purpose of developing a future watershed management plan. Information collected from previous studies, ongoing studies, and the tasks proposed in this proposal will be used to develop a watershed conditions assessment that will identify resource problems throughout the watershed and be used as the basis for a future watershed management plan (Phase III). The primary design of the proposed project is problem identification and inventory. These tasks do not require rigorous monitoring of watershed processes; rather, monitoring efforts should be directed at assessing the efficacy of the proposed project. To support adaptive management objectives, mid- and end-project evaluations will be scheduled to solicit input and feedback from all involved entities (as discussed in Task 1). These debriefing meetings will focus on evaluating achievement of project objectives and providing recommendations for improving project implementation and management.

UCD’s Cosumnes Research Group (CRG) is currently engaged in data collection efforts to support long-range monitoring and assessment of watershed conditions. These efforts complement the proposed project’s goal of identifying watershed problems through a resources inventory and assessment. The RCD’s coordination with, and support of UCD’s CRG will allow for information sharing, data exchange, and expanded research capacity among both groups.

Scientific Basis

Numerous ongoing and previous resource studies have been conducted in the Cosumnes River watershed. In the preparation of this proposal, the RCD identified two primary goals:

- Avoid duplication of previous and ongoing efforts; and
- Ensure that any data collected in an additional resource study will support “on-the-ground” watershed improvements in an expeditious time frame.

In that context, the RCD and its proposed technical consultants conducted numerous interviews with staff from the following organizations:

- UCD CRG;
- Cosumnes River Preserve (CRP) (specifically The Nature Conservancy);
- U.S. Department of Agriculture’s (USDA), Natural Resources Conservation Service (NRCS) Watershed Planning Services, California State Office;
- Forest Service, Eldorado National Forest;
- El Dorado RCD;
- Amador RCD;
- Sacramento Area Flood Control Agency;
- American River Conservancy;
- U.S. Army Corps of Engineers, Sacramento District; and
- California Department of Fish and Game (DFG).

The purpose of these interviews was to confirm the specific efforts, goals, and data types being developed by these organizations; to confirm and/or dismiss the need for other resource collection efforts (specifically for the support of a planning process); and to ensure that any tasks proposed would be additive to ongoing and previous efforts.

Based on these interviews, the RCD has concluded that baseline data needs still exist, specifically in the areas of sediment contribution and transport and fluvial geomorphic conditions and trends. The NRCS has catalogued data sources but has not actually compiled these data for a planning process. Work by the CRP is proving to be informative for floodplain restoration and enhancement but is focused on the lowest reach of the Cosumnes River and does not address critical spawning habitat upstream. Work by the Forest Service regarding land use, road conditions, land/vegetative cover, and similar data are very informative and important to the overall understanding of the watershed. These data have been collected only for the federal lands in the most upstream portions of the watershed, but will provide an invaluable baseline for tasks proposed in this document. Work being developed by the UCD CRG is focused on long-term monitoring and is not geared toward near-term planning analysis and improvements implementation. Additionally, the efforts of the UCD CRG do not include public outreach methods to disseminate updated information to stakeholders.

Lastly, the RCD has concluded that no process presently exists to merge all the data efforts into a cohesive, comprehensive summary of watershed conditions that can easily inform a future planning process. In that context, the RCD has proposed the previous tasks and subtasks be funded by the CALFED Watershed Program. As evidenced in Appendix B of this proposal, the above organizations have provided their support to this proposed effort. They have acknowledged the need to coordinate the use of all these data and begin synthesizing them into a comprehensive planning process. The RCD and the above organizations have made formal commitments to each other to share all available and future data and to ensure that data collection and analysis procedures are broadly discussed with specialists and local stakeholders alike.

CALFED Nexus

CALFED Objectives: The proposed Watershed Inventory and Assessment promotes CALFED's mission to restore ecosystem health and improve water quality in the Bay-Delta. The Inventory will support improvements to ecosystem quality by identifying problems in the Cosumnes River watershed and providing an information base for future watershed planning efforts. It will also support the improvement of water quality and fish and wildlife habitat by prioritizing and recommending areas and resources for treatment to reduce erosion, sediment, and flood damage.

The Watershed Inventory and CALFED share many of the same objectives, including improving watershed management, restoring ecosystem functions, and improving water quality. As a partnering entity, CALFED will be included in the project's efforts to achieve these objectives through coordination and collaboration among stakeholder groups. CALFED representatives' presence would be requested at outreach events, CRTF meetings, technical workshops, and similar events. Coordination with CALFED's Science Program and the TAMP and AMP will be essential.

CALFED Relationships: There is some concern among private landowner stakeholders about the goals, objectives, mission, and implementation of CALFED that is based largely on a lack of understanding of CALFED. The CRTF provides an excellent, established venue to identify mutual benefits that can be shared by CALFED and Cosumnes River stakeholders. The more outreach and communication that is conducted among all involved interests, the more likely it is that perceived barriers and misconceptions will be diminished. The fears of some stakeholders stem largely from not fully understanding the complexity of CALFED and the commitments CALFED has made to protect local economic stability, improve resource conditions, and other similar goals. The RCD and CRTF pledge to remove the "mystery" of CALFED and to identify through actions, symbols, and words that Cosumnes River stakeholders and the CALFED program have more in common than they have in conflict.

Environmental Compliance: As identified in the attached Environmental Information Form, the proposed project does not include physical implementation of site-specific projects that will affect the environment. Additionally, the proposed project will not result in any discretionary action by federal, state, or local governments. Therefore, environmental compliance efforts such as NEPA/CEQA are not required to be completed.

CALFED Watershed Program Budget Summary I (Sheet I)

Task Description	Labor	Supplies	Materials	Subcontract	Match	CALFED	Total
Task 1: Adminstration	\$6,405	\$200	\$5,225	\$0	\$5,225	\$6,605	\$11,830
Task 2: Develop and Complete Resource Inventories	\$2,890	\$50	\$0	\$465,060	\$20,000	\$448,000	\$468,000
Task 3: Assess Watershed Conditions and Identify Resource Problems	\$3,560	\$150	\$0	\$29,330	\$2,500	\$30,540	\$33,040
Task 4:Create Watershed Conditions Assessment	\$1,780	\$50	\$0	\$33,156	\$2,500	\$32,486	\$34,986
Task 5:Conduct Public Outreach and Education	\$22,250	\$1,300	\$9,075	\$25,144	\$19,075	\$38,694	\$57,769
					\$49,300	\$556,325	\$605,625

CALFED Watershed Program Budget Summary I (Sheet II)

Subcontractor Spreadsheet

Task Description	Labor	Supplies 1	Materials 2	Subcontract*	Match	CALFED	Total
Task 1: Administration	\$0	\$0	\$0				\$0
Task 2: Develop and Complete Resource Inventories	\$392,338	\$45,522	\$27,200				\$465,060
Task 3: Assess Watershed Conditions and Identify Resource Problems	\$26,713	\$2,617	\$0				\$29,330
Task 4: Create Watershed Conditions Assessment	\$31,646	\$1,510	\$0				\$33,156
Task 5: Conduct Public Outreach and Education	\$23,264	\$1,880	\$0				\$25,144
							\$552,630

Note 1: Supplies can include meals, lodging, computer time, faxes, reproductions, equipment rental, postage, travel, printer/plotter, and general and administrative expenses of 9.5% on all non-labor costs

Note 2: Materials include aerial photo support for Task 2.1, and laboratory analysis support for Task 2.7

CALFED Watershed Program Budget and Project Summary II

Task Description		Completion date	Match funds	CALFED funds	Total
Task 1:	Administration: budget and subcontractor oversight, communication with funding agency(ies), project reporting Task Product(s): monthly and quarterly reports, invoices, Success Criteria: RCD will conduct mid and end project evaluation sessions to assess project status and progress	Month 18	\$5,225	\$6,605	\$11,830
Task 2:	Develop and Complete Resource Inventories				
Task 2.1:	<i>Compile complete set of aerial imagery for the watershed.</i>	Month 3	\$0	\$22,948	\$22,948
Task 2.2:	<i>Prepare watershed level erosion features map</i>	Month 3	\$0	\$46,497	\$46,497
Task 2.3:	<i>Prepare watershed level land cover/land use map</i>	Month 5	\$0	\$37,594	\$37,594
Task 2.4:	<i>Prepare map of and evaluate unsurfaced roads</i>	Month 4	\$0	\$38,017	\$38,014
Task 2.5:	<i>Prepare a sediment yield analysis of watershed</i>	Month 5	\$0	\$45,419	\$45,419
Task 2.6:	<i>Conduct channel conditions assessment</i>	Month 7	\$0	\$78,169	\$78,169
Task 2.7:	<i>Conduct sediment transport modeling</i>	Month 10	\$20,000	\$94,555	\$114,555
Task 2.8:	<i>Historical reconstruction of middle reach</i>	Month 8	\$0	\$81,861	\$81,861
	Task Product(s): see above Success Criteria: Useability in the defensible identification of watershed problems				
Task 3:	Assess watershed conditions/ID problems Task Product(s): Consensus summaries of watershed problems, cause and effect relationships Success Criteria: Consensus opinions among agencies, academicians, and consultants	Month 14	\$2,500	\$29,330	\$33,040
Task 4:	Create watershed conditions report Task Product(s): Final document, minutes from stakeholder meetings Success Criteria: CRTF and RCD are positioned with enough data to initiate watershed planning process (Phase III)	Month 16	\$2,500	\$32,486	\$34,986
Task 5:	Coordinate public outreach/education Task Product(s): Conduct workshops, provide speakers, prepare newsletters/webpage data Success Criteria: Extensive stakeholder involvement	Month 18	\$19,075	\$38,694	\$57,769